



# Regional Sediment Management

**St. John's County, Florida: Regional approach  
to sediment management**

**RSM approach finds support during  
recent CERB meeting**

**Federal-state partnership benefits**

**Sediment Impact Assessment Model (SIAM)**

## Regional Sediment Management

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*James R. Houston*  
James R. Houston, Ph.D.  
Director

## About the Cover

The 2.4-mile section of the beach south of Matanzas Inlet known as Summer Haven, see article page 1 (photo courtesy Daniel R. Haubner, Jacksonville District, U.S. Army Corps of Engineers)

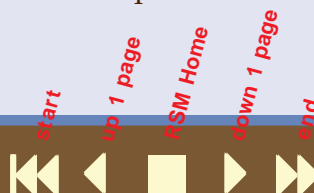


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# St. John's County, Florida: Regional approach to sediment management ensures success for two beach erosion control projects

*By Daniel R. Haubner, Jacksonville District, U.S. Army Corps of Engineers*

Under the oversight of the U.S. Army Corps of Engineers District, Jacksonville, Florida, two Regional Sediment Management initiative-related projects located in St. John's County came to a successful completion. The 2-year projects resulted in cost savings to the Federal government and the local sponsors, while keeping material flowing in the littoral zone. Both projects were co-sponsored by the U.S. Army Research and Development Center's National RSM Demonstration Program.

## Federal Shore Protection Project

St. John's County is located on the northeast coast of Florida approximately midway between the Florida/Georgia state line and Cape Canaveral. The county is bounded to the north by Duval County (Jacksonville) and to the south by Flagler County. St. John's County has approximately 42 miles of coastal shoreline and two inlets, St. Augustine to the north and Matanzas to the south. The Corps, under authority of the Water Resources Development Act of 1986, helped plan a Federal Shore Protection Project for St. John's County. The Corps further evaluated the plan in a General Reevaluation Report completed in 1998, resulting in a 2.5-mile project south of St. Augustine Inlet from Florida Department of Environmental Protection (DEP) Monuments\* 137 to 150 (Figure 1).

Immediately north of the shore protection project is the Federal navigation project for St. Augustine Harbor. St. Augustine Inlet is an improved tidal inlet connecting the Tolomato and Matanzas Rivers, part of the Intracoastal Waterway, to the Atlantic Ocean. Originally, a natural inlet located about 400 yards south of its current location, the inlet channel was relocated in 1940. The inlet has been stabilized by a north jetty structure about 1,880 feet long built in 1941 and a south jetty about 3,695 feet long built in 1957. The inlet channel is authorized at 16 feet and the interior channels at 12 feet, shallow draft depths.

\* The state of Florida has established benchmarks for coastal monitoring around the state, numbered as "Monuments."



Figure 1. St. John's County Study Area Map



As part of the Florida DEP Strategic Beach Management Plan for this area, it was calculated that bypassing an average of 510,000 cubic yards of material across St. Augustine Inlet to the down drift beaches would avoid negative impacts (Figure 2). Corps funding for shallow draft navigation projects and for inlet maintenance is generally sporadic. So when the opportunity arose to combine this shore protection project with the maintenance of the inlet, several actions had to occur.

Down drift mitigation impacts needed to be determined and quantified for cost-sharing purposes; the new “borrow” area had to be coordinated with the environmental agencies; and permits had to be reacquired. But these relatively minor actions resulted in reduced costs for initial construction and future renourishment of the beach; reduced costs and more frequent maintenance of the Federal inlet; an increase in recreational benefits; enhanced sea turtle nesting habitat; dune restoration; and, of course, the original goal of



*Figure 2. St. Augustine Inlet*

protecting the upland development. Construction of the project (Figure 3) required placement of approximately 1,745,000 cubic yards of design fill and 1,625,000 cubic yards of advance material (3,373,000 cubic yards total). The primary borrow source (St. Augustine Inlet ebb shoal) was

located nearby, 4.5 miles from the center of the project area. Funding constraints required two mobilizations, and the project was completed in January 2003. Nourishment is estimated to be needed every 5 years over the 50-year life of the project with 1,600,000 cubic yards needed

each time. Some of the lessons learned consisted of demonstrating the cost savings that can be realized by linking shore protection and navigation projects, and that mitigation can be less expensive and more beneficial than litigation.

## Matanzas Inlet Beach Erosion Remediation Project

The second successful project for St. John's County involved the use of material from the Intracoastal Waterway (IWW) to help protect an overwashed, critically eroding 2.4-mile section of the beach south of Matanzas Inlet known as Summer Haven (Figure 4). The IWW near Matanzas Inlet is subject to shoaling and must be regularly dredged to maintain navigation. Maintenance dredging of the IWW channel is estimated at nearly 50,000 cubic yards per year. The dredged sediment is pumped into the dredged material management site, MSA SJ-1, until the 800,000-cubic-yard capacity is reached. As SJ-1 reaches capacity—and the high prices in real

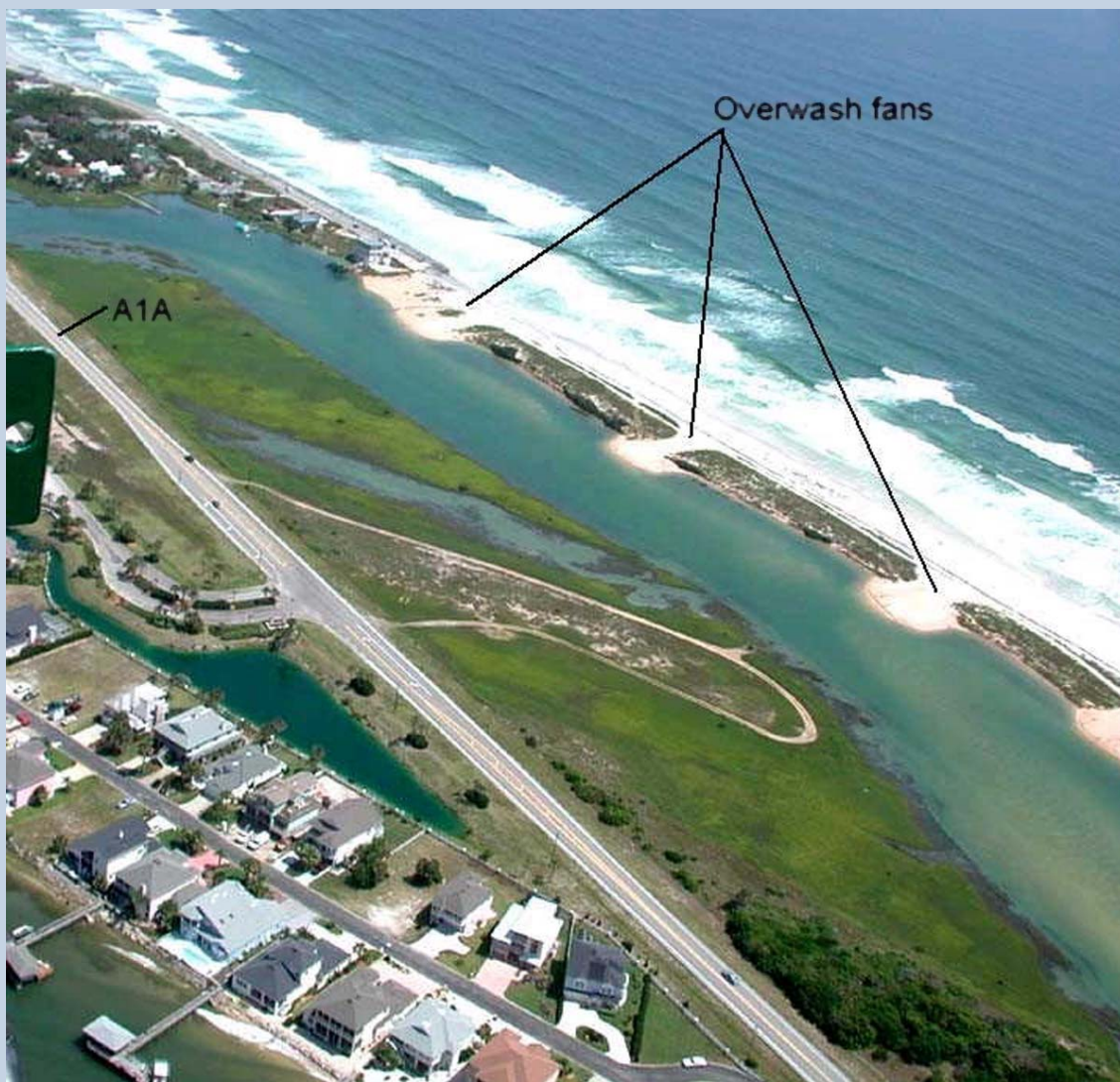


*Figure 3. Construction site*

estate preclude the addition of another disposal area—offloading SJ-1 contents onto the beach becomes a very viable alternative. Between January and April of 2001, more than 800,000 cubic yards of beach quality sediment was offloaded from SJ-1 (Figure 5) and placed on the beaches of Summer Haven. The unit

cost of placing the sand directly on the beaches from the IWW can be almost double that of what it costs to place it in SJ-1; however, since SJ-1 is not capable of holding an infinite amount of material and the real estate costs for expansion of the site are prohibitive, it is an economically and environmentally viable solution





*Figure 4. Summer Haven*

to periodically offload the site to the beaches. This solution increases disposal capacity, keeps material flowing in the littoral environment, provides sea turtle habitat, and protects the coastal ecosystem behind the beach (Figure 6). Close coordination between the Corps, the Florida Inland Navigation District (sponsor for the IWW), the county of St. Johns, and the state of Florida was required to realize all of the benefits that were gained from these actions. The lines of communication developed by RSM helped maintain and enhance the required coordination.

### **RSM community benefits**

The projects described above demonstrate that a regional approach to sediment management can be beneficial on a large scale. Corps Districts and Divisions have worked on a regional basis on many projects. With the push to inject the RSM approach into Corps business practices, successes, as experienced in Florida's St. John's County, can contribute major lessons learned for the benefit and value to the nation.



*Figure 5. Offloading beach quality sediment from SJ-1*



*Figure 6. Offloading SJ-1 contents onto the beach*

Additional information about these projects  
is available from [Daniel.R.Haubner@saj02.  
usace.army.mil](mailto:Daniel.R.Haubner@saj02.usace.army.mil).



# RSM approach finds support during recent CERB meeting

The Coastal Engineering Research Board (CERB) (see sidebar on page 9) met in Portland, Oregon, for its 76<sup>th</sup> meeting, 28-30 October 2003. The Corps' RSM approach was among the topics on the agenda.

Jack E. Davis (Figure 1), RSM Research Program Manager, addressed the members and audience of the CERB about the Corps' emphasis on a regional approach to sediment management. He spoke about the successes that were garnered from the demonstrations and the Gulf Guardian Award given by the EPA for the RSM demonstration work performed with the Mobile District. Davis paraphrased the citation as: "... (we) got the award for bringing regional sediment management concepts into the District office; and for moving from sediment management that's project specific to management that is regional; and, in doing that, bringing together stakeholders and creating partnerships."

Davis stressed the money savings at several projects, as well as the fact that some of the demonstrations—where specific activities are under way—engineers and scientists working there have taken the concepts of regional management to other projects in their District: "So, RSM is starting to grow and become a part of our daily routine," said Davis.

He added that "... from a technical point of view, in the original demonstration in the Gulf of Mexico we developed an excellent GIS system with very strong underlying architecture and an excellent toolset to help us do



*Figure 1. Jack Davis, Ph.D., U.S. Army Engineer Research and Development Center (ERDC), RSM Research Program Manager, addresses the 76th meeting of the CERB*

regional sediment management. And that tool is being picked up by other demonstrations around the country."

At the conclusion of the meeting, the board (Figure 2) thanked the presenters. The conclusions were summarized by board member Dr. Joan Oltman-Shay from Northwest Research Associates in Bellevue, Washington: "I, too, would like to thank all the presenters. Your efforts are very much appreciated. The sharing of your knowledge, your tools, your perspective, is really central to the success of RSM, of regional sediment management.

"And I concur that, really, RSM should not just be an Army Corps concept... It really is a national perspective.



*Figure 2. CERB Board members at the 76th meeting in Portland, Oregon, from left are: BG Randal R. Castro, Commander of South Atlantic Division; Dr. Billy L. Edge, Texas A&M University, College Station, Texas; MG Carl A. Strock, Director of Civil Works, Washington, DC, and President of CERB; Dr. Joan Oltman-Shay, Northwest Research Associates, Inc., Bellevue, Washington; and Dr. R. Bruce Taylor, Taylor Engineering, Inc., Jacksonville, Florida*

“I would like to thank the audience as well for listening, because listening to these presentations, you go back to your desks and, with that knowledge, you now help us all move forward with RSM and leverage the knowledge you have heard today to move RSM to success.

“RSM is something the Board has been working pretty actively on for many years now. It’s something that we all very much believe in and believe that is necessary for the long-term well being of our nation and its infrastructures...”

Major General Carl A. Strock, CERB President, closed his remarks with this observation: “...Many, many recommendations were made today, and I really appreciate each of the presenters laying those out for us in terms of what they would like to see as an outcome of these discussions. I will be working with the Board to take each of those on, and we will make specific, active decisions on where to go with each of those recommendations.”



# Coastal Engineering Research Board Overview

Established by Public Law in 1963, the Coastal Engineering Research Board (CERB) functions as an advisory board to the Chief of Engineers. It was originally established in 1930 as the Beach Erosion Board.

The CERB provides broad policy guidance and review of plans and fund requirements for the conduct of research and development of projects in consonance with the needs of the coastal engineering field and the objectives of the Chief of Engineers.

The Board meets semiannually around the U.S. coastline and the Great Lakes on a rotating basis.

The Board is composed of seven members. The President of the Board is the military position of Director of Civil Works. The other three military members are senior officers that are Division Engineers of coastal Divisions. The three civilian members are outstanding in the broad field of coastal engineering. The Commander of the U.S. Army Engineer Research and Development Center acts as the Executive Secretary of the CERB and is responsible for all administrative functions of the Board.

The military members usually serve until their tenure as a Division Commander is completed or as determined by the Chief of Engineers. The civilian members serve 2-year terms not to exceed 4 years.



*Figure 3. Anniversary cake marks 40 years since the name (and some policy) change from “Beach Erosion Board” to the current “Coastal Engineering Research Board.”*

# Federal-state partnership benefits California's regional sediments projects

by George Domurat, U.S. Army Corps of Engineers, South Pacific Division, and Brian Baird, California Resources Agency

The state of California's 1,100 miles of shoreline facing the Pacific Ocean is composed of sandy beaches, rocky headlands, scenic coastal bluffs, estuaries, and coastal wetlands. The unique geography, diverse climate zones, and strategic economic position on the Pacific Rim drive the state's population's strong desire to live, work, and recreate along the shoreline. With 85 percent of the population living within 50 miles of the coast, urbanization pressures have seriously impacted natural coastal resources. Flood control, navigation, and water

supply projects can degrade the streams, rivers, and watersheds by impeding the natural movement of sediment to the coastal zone. The lack of sediment supply, combined with recent increases in storm activity, has caused substantial coastal erosion. Each year, this erosion causes substantial economic and environmental damage. In order to restore and preserve the remaining coastal shorelines, wetlands, and watersheds, a comprehensive master plan with a regional systematic approach to resolving coastal sediment management issues must be developed.

The U.S. Army Corps of Engineers and the California Resources Agency established the California Coastal Sediment Management Workgroup (CSMW) as a forum for developing such a plan. The CSMW enables members to consider regional approaches to protecting, enhancing, and restoring California's coastal beaches and watersheds through Federal, state, and local cooperative efforts. The CSMW was initiated in late 1999 and is the first state and Federal partnership developed in California for ongoing, multi-agency dialogue and interaction on state-wide





coastal sediment management issues, including Federal and state funding and project coordination.

The Corps participates in the CSMW as the Federal agency with the mission, authority, and capability to assist with managing and restoring coastal shorelines, wetlands, and watersheds. In addition, the Corps has lead Federal authority for flood control, ecosystem restoration, and navigation activities that provide systematic coastal sediment management linkages. The California Resources Agency participates as the state “super agency” with oversight responsibilities related to conserving, enhancing, and managing California’s

natural and cultural resources. These resources include coastal beaches, coastal watersheds, and the ocean ecosystem. Composed of multiple departments, boards, commissions, conservancies, and programs, the California Resources Agency works with the Ocean Resources Management Program, Department of Boating and Waterways, State Lands Commission, and State Coastal Conservancy. In addition to the Federal and state representation listed above, CSMW members interact with members of the California Coastal Coalition (CalCoast), a non-profit organization composed of representatives from cities, counties,

and regional government agencies along the coast. CalCoast resources provide the CSMW with local feedback and updates about projects and studies underway in these coastal communities.

In addition to the Federal, state, regional, and local coordination, each of the various groups in the CSMW uses group discussions to strengthen their respective programs within the context of state-wide coastal sediment management. For example, the state agencies have used the workgroup to coordinate the development and review of projects that will be undertaken through recent state funding and bond issue programs. The CSMW



provides a forum to enhance these individual efforts, to minimize redundant studies, and to ensure that the various studies enhance and complement each other.

## **Accomplishments and Ongoing Projects**

The Corps has hosted regular meetings of the CSMW and has assigned top-level staff from the South Pacific Division and the San Francisco and Los Angeles Districts to participate. Similarly, the Secretary for Resources has appointed the Ocean Program Manager as the state lead and directed a number of departments under the California Resources Agency's purview to participate. This high-level attention to a regional sediment management approach is showing commitment to a cooperative effort on all sides.

As needed, Corps and California Resources Agency representatives have assigned staff to work with the CSMW, promoting a thorough understanding of state and Federal processes, budget actions, and the legal basis for decisionmaking. The Corps

has also participated with regular updates on its ongoing projects and studies and shared ideas from around the country on how to address various sediment management issues.

In fiscal year 2001, due in part to the establishment of the CSMW, the state of California allocated significant new funding (\$10 million) for beach restoration, beach nourishment, and studies to determine ways to reduce beach erosion. The CSMW has provided California decision-makers with information to support new investment in these issues and to help attract additional funding from non-state sources. These efforts provided a strong factual basis to support the allocation of yet another \$8.5 million by the state of California for these activities.

The initial focus of the CSMW has been on improving state and federal coordination of coastal sediment management projects through discussions about state needs/priorities and Corps project authorities and capabilities. Perhaps the most important service that the group pro-

vides is a regularly scheduled forum for member agencies to meet and discuss project issues related to coastal beaches and watersheds, thus increasing awareness of existing and planned activities.

## **Intermediate goals**

Intermediate goals for the CSMW include ways to:

- Identify and involve representation of the various groups with interests in coastal sediment management in California,
- Involve not-for-profit and other non-governmental organizations,
- Involve the general public.

The group's method aims for success through workshops for the general public occurring in conjunction with existing events, such as coastal conferences and public meetings sponsored by government agencies. The CSMW also helps educate both the general public and local and regional governments about current coastal sediment management efforts in California, and solicits input for identifying ways to fund projects and





improve the management of the state's coastal beaches and watersheds.

The ultimate goal of the CSMW is improved coastal beach and watershed management. Key to achieving this goal is the creation of the first joint Federal-state comprehensive

Coastal Sediment Master Plan that has the support of the member agencies and stakeholders. This program was funded through the Coastal Impact Assistance Program administered by the California Resources Agency, with additional support from

recent appropriations to the Corps for this purpose. The sediment master plan is an issue-driven collaborative effort between Federal and non-Federal partners. The plan identifies linkages between the Corps' multiple responsibilities and state, regional, and local programs, while at the same time laying the groundwork for a strong partnership with non-Federal stakeholders to constructively identify and implement regional coastal sediment management strategies.

**Additional information may be obtained by contacting the author at *George.W.Domurat@spd02.usace.army.mil*.**

# Sediment Impact Assessment Model (SIAM): Tool for rapid evaluation of assessment alternatives

*By David S. Biedenbarn, ERDC Vicksburg, Coastal and Hydraulics Laboratory*

In the quest for balanced and sustainable solutions to regional sediment challenges, the ever-increasing complexity of water resource projects and their impacts on the environment and economics poses enormous challenges. There is a growing emphasis on tools that enhance the ability to implement effective regional sediment management Corps-wide. One common goal of many regional sediment management projects is reducing sediment loading from the watershed.

Reduced sediment loading is usually accomplished through rehabilitation features like grade control, bank stabilization, drop pipes, dams, and land treatments. While these features are often implemented to reduce sediment yields to downstream reservoirs, flood control channels, or wetlands, the spatial and temporal responses of these features are complex, and often result in unanticipated morphologic changes

in the channel system. Therefore, the challenge in regional sediment management projects is to select the appropriate sediment management features that produce the desired reductions in sediment delivery while minimizing the disruption to the stability of the channel systems.

To facilitate this selection process, ERDC is currently developing the Sediment Impact Assessment Model (SIAM) as part of the Regional Sediment Management Research Program. SIAM provides for the rapid assessment of the impacts of sediment management features on downstream sedimentation trends. Corps staffs at ERDC and the Hydrologic Engineering Center (HEC) are working to include SIAM as a module in HEC-RAS (River Analysis System).

## Model information

SIAM provides a framework to combine channel morphologic, hydrologic, and hydraulic information for

a series of reaches that represent a network of channels. The algorithms use sediment continuity and the connectivity between reaches to evaluate the impact from local changes on the system. SIAM develops a map of potential imbalances in a channel network to provide the first step in identifying design or remediation needs.

A key component of SIAM is the ability to assess short-term changes in sediment delivery and the potential morphological response to sediment management features such as bank stabilization, grade control structures, flow control, land treatments, or any other measure that alters the flow and/or sediment regime. SIAM tracks sediment through the system by grain size and recognizes that material that is wash load at one location may become bed material load at another. Therefore, removal of a source of sediment in the upper reaches where the material



is wash load may result in an immediate reduction in bed material supply to the reaches further downstream.

The wash load/bed material load threshold must be supplied by the user. SIAM creates a sediment budget by summing the supply from local sediment sources, estimating the annual transport capacity for bed material classes, and determining the contribution in wash load material size classes for each reach of the channel system. For each reach, the results show the total contribution from local sediment sources, annual transport capacity, wash load supply, and bed material supply.

### Model results

Output from SIAM can be summarized in both tabular and graphical format. In tabular format, an “answer quilt” (Table 1) allows viewing the stability of multiple scenarios

**Table 1**

**Example Answer Quilt. Values reflect annual bed material supply minus transport capacity in tons/year**

Reach	Existing Condition	Removal of Gravel Mines	Bank Stabilization	Land Treatment
H-1	245,000	214,000	241,000	85,100
H-2	48,000	42,000	47,600	15,800
H-3	48,900	34,000	46,400	18,600
H-4	18,000	6,800	17,600	16,600
H-5	-2,100	-13,100	-2,100	-3,250
H-6	2,200	-11,000	1,260	-1,090
H-7	-3,600	-3,600	-4,500	-6,900
H-8	-9,600	-9,600	-10,400	-11,800
H-9	-8,100	-8,100	-9,000	-9,800
H-10	-12,200	-12,200	-12,600	-13,200
<p>Red – Aggradational  Blue – Degradational  Green – Dynamic Equilibrium (defined here as plus or minus 4,000 tons/year)</p>				

simultaneously over all reaches. The answer quilt displays scenarios in the columns and the reaches in rows with the equilibrium parameter filling in the matrix. Color-coding identifies significant trends, with red indicating aggradation, blue degradation, and green dynamic equilibrium. Therefore, the answer quilt provides an easy and rapid way to observe the impacts of various rehabilitation techniques. The example answer quilt (Table 1) is based on results from the Hickahala Creek Watershed in North Mississippi. Values in the answer quilt represent the annual bed material supply to the reach minus the transport capacity. For instance, under existing conditions, Reach H1 has 245,000 tons/year more bed material supply than capacity while Reach H10 has 12,200 tons/year more capacity than supply. As shown in Table 1, the existing conditions of the lower reaches (H1-H4) are severely aggradational while the upper reaches (H7-H10) are degradational. The middle reaches (H5-H6) are in dynamic equilibrium, which for this

case was defined as plus or minus 4,000 tons/year. For this example, a hypothetical gravel mine was placed in the watershed near reach H6 to illustrate the effect of removing a large source of sediment. The answer quilt illustrates that the removal of the gravel caused a fairly significant reduction in the aggradational tendency of the lower reaches. However, reaches H5 and H6, which were initially in dynamic equilibrium, became degradational. Therefore, while this alternative might provide improvement to the lower reaches with respect to sedimentation and flood control, it carries with it the potential to destabilize the middle to upper reaches through channel incision.

The second alternative shown in Table 1 provides bank stabilization information of the significant erosion zones in the watershed. However, due to the relatively slow erosion rates and the fine composition of the bank material, the effects of this alternative are insignificant. Therefore, while bank stabilization in this instance could be extremely impor-

tant to the protection of valuable infrastructure and riparian areas, its effect on reducing sediment loads to the downstream reaches is minimal.

The last alternative shown in Table 1 is the implementation of a comprehensive land treatment program to control erosion and reduce sediment delivery to the streams. This alternative resulted in a significant reduction in the aggradational trends in the lower three reaches with relatively minor impacts to the rest of the channel system. Therefore, if the goals of the project were to reduce the sediment delivery to the lower reaches with the least amount of morphologic impacts to the channel system, then the land treatment alternative would be more effective than the other alternatives.

SIAM aims to integrate watershed-scale sediment continuity concepts into stream rehabilitation and management. The analysis will provide an intermediate step between qualitative evaluations and comprehensive mobile boundary numerical models. Therefore, SIAM is an



excellent tool for rapid assessment of multiple rehabilitation alternatives, particularly in reconnaissance and feasibility phases of a project. SIAM provides a framework to combine hydrology, hydraulics, and sediment supply into a geomorphic assessment and rehabilitation design. With sediment as the number one ranking pollutant in streams and a contributing agent in many others, the addition of SIAM into the river-engineering tool kit will empower designers and planners to more easily consider sediment supply and transport in management and rehabilitation of channel systems.

**The ERDC point of contact for SIAM is the author, David Biedenharn, e-mail *David.S.Biedenharn@erdc.usace.army.mil*. IWR contact is Gary Brunner, e-mail *Gary.W.Brunner@hec01.usace.army.mil*.**



*Sedimentation in Hickahala Creek, Mississippi, watershed*

# Mark Your Calendar

**5-9 Apr - Florida Shore & Beach Preservation Association (FSBPA) National Hurricane Conference**, Wyndham Palace Resort & Spa, Lake Buena Vista, FL. More information is available at <http://www.fsbpa.com/conferences.html>.

**13-15 Apr - U.S. Army Corps of Engineers: Economic and Environmental Analysis Conference**. "Toward Integrated Water Resources Management," at the Renaissance Harborplace Hotel in downtown Baltimore, MD. For information and registration: <http://www.nab.usace.army.mil/2004%20E&E%20Conf/Title%20Frameset.htm>.

**28 Apr-1 May - 3d International Symposium on Gully Erosion**, Oxford, MS, USA. Information can be found at <http://gullyconference2004.olemiss.edu/>.

**7 May - Deadline for abstract submittal for 1-4 Nov 2004 AWRA Conference** (see below or at <http://www.awra.org/meetings/Orlando2004/index.html>).

**12-17 Sep - 4th International Conference on Land Degradation**, in Murcia, Spain. Point of contact is Dr. Gregorio Garcia, Secretary of the ICLD4, e-mail: [icld4@upct.es](mailto:icld4@upct.es). Visit the website for additional information at <http://www.upct.es/icld4>.

**23-26 May - Ports 2004: Port Development in the Changing World**, Houston, Texas, Galleria & Westin Oakes Facility. Four pre-conference workshops are offered. Additional information and registration is available at [www.asce.org/conferences/ports2004/about.cfm](http://www.asce.org/conferences/ports2004/about.cfm).

**28-30 Jun - AWRA 2004**, The Resort at Squaw Creek, Olympic Valley, CA. Conference theme is "Riparian Ecosystems and Buffers: Multi-scale Structure, Function and Management." More information is available online at <http://www.awra.org/meetings/Olympic2004/index.html>.

**Summer - Symposium on Erosion, Lima, Peru**. Point of contact is Professor Suarez Diaz, e-mail [erosion@epm.net.co](mailto:erosion@epm.net.co).

**4-9 Jul - 13th International Soil Conservation Organization (ISCO) Conference** in the theme: "Conserving Oil and Water for Society: Sharing Solutions, Brisbane, Australia." More information is available from Mike Grundy, Phone: +61-7-38969395, Fax: +61-7-38969898, [grundym@nrm.qld.gov.au](mailto:grundym@nrm.qld.gov.au) or [mik\\_beth@bigpond.net.au](mailto:mik_beth@bigpond.net.au). Brochure at <http://www.isco2004.org/>.

**2-6 Aug - International Symposium on Sediment Transfer through the Fluvial System**, Moscow, Russia. Sponsored by The International Association of Hydrological Sciences (IAHS), International Commission on Continental Erosion (ICCE), and co-sponsored by Moscow State University. Contact and information Valentin Golosov or Vladimir Belyaev, Phone: 007-095-9395044, Fax: 007-095-9395044.

**12-15 Sep - 2nd National Conference on Coastal and Estuarine Habitat Restoration** will take place in Seattle, WA, Washington State Convention & Trade Center and the Grand Hyatt Seattle Hotel. More information can be found at <http://www.estuaries.org> or by contacting: [Nicole Maylett](mailto:Nicole.Maylett@estuarine.org), Conference Coordinator, Phone: 703-524-0248, or [Steve Emmett-Mattox](mailto:Steve.Emmett-Mattox@estuarine.org), Vice President and Program Director, phone: 703-524-0248.

**19-24 Sep - 29th ICCE**, sponsored by the Portuguese coastal engineering community in Lisbon, Portugal, and the Coastal Engineer Research Council (CERC) of the American Society of Civil Engineers (SCE), will take place at the Congress Center of the National Civil Engineering Laboratory (LNEC), an institution of science and technology created in 1946. Manuel Marcos Rita chairs the conference. A technical exhibition will be held at the conference venue to highlight products, services, and research activities of interest to coastal engineers. Information is available online at <http://www.icce2004.org/>; mail: ICCE 2004 Secretariat c/o LNEC - DIEAG; Av. do Brasil, 101; 1700-066 Lisboa, Portugal; Phone: +351-21-8443483 or 8443900; Fax: +351-21-8443014; e-mail: [icce2004@lnec.pt](mailto:icce2004@lnec.pt).



**27 Sep - 1 Oct - WODCON XVII**, “Dredging in a Sensitive Environment,” World Dredging Congress XVII at CCH - Congress Centrum Hamburg, Germany. In conjunction with SMM 2004, the Shipbuilding, Machinery and Marine Technology International trade fair. Contact the Central Dredging Association, PO Box 488, 2600 AL Delft, The Netherlands. Phone: +31 15 278 3145; Fax: +31 15 278 7104; email: [ceda@dredging.org](mailto:ceda@dredging.org) and Westin Oaks. More information can be found at <http://www.woda.org/WODCONXVII/index.html>.

**29 Sep-1 Oct - Florida Shore & Beach Preservation Association (FSBPA) Annual Meeting**, to be held at the South Seas Resort, Captiva Island, FL. More information is available at <http://www.fsbpa.com/conferences.html>.

**18-21 Oct - 9th International Symposium on River Sedimentation: Interaction Between Fluvial Systems and Hydroprojects and Their Impact, Yichang, China.** Contact: Hu Chunhong, Phone: +86-10-8415522/684156576/68413372, Fax: +86-10-68411174, [irtces@public.bta.net.cn](mailto:irtces@public.bta.net.cn), [irtces@95777.com](mailto:irtces@95777.com).

**1-4 Nov - AWRA's 2004 and 40th Anniversary Annual Water Resources Conference**, at the *Sheraton World Resort*, Orlando, FL. The focus of this year's program is “Meeting Water Resources Needs in Growing and Rapidly Changing Regions.” More information is available by contacting the organization at [harriette@awra.org](mailto:harriette@awra.org). Phone: (540) 687-8390, or from the Web at <http://www.awra.org/meetings/Orlando2004/index.html>.

**14-17 Nov - Second International Conference on Scour and Erosion, Singapore.** Information is available at <http://www.icse2004.org/> or contact Professor Chiew at [CYMCHIEW@ntu.edu.sg](mailto:CYMCHIEW@ntu.edu.sg).

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## New Online Publications

### *Demonstration Program Briefs - Online*

**ERDC/RSM-DB11**, January 2004, South Atlantic Division, Regional Sediment Management Demonstration Project (379 kb pdf, 4 pages) <http://www.wes.army.mil/rsm/pubs/demobriefs.html>.

### *RSM Technical Notes - Online*

**ERDC/RSM-TN-12**, February 2004, Design Approach for Regional Sediment Management (1.83 kb pdf, 16 pp) <http://www.wes.army.mil/rsm/pubs/technote.html>.

**ERDC/RSM-TN-1**, January 2004, The Corps of Engineers' National Regional Sediment Management Demonstration Program (4.62 MB pdf, 43 pages) (Updated, replaces all previously published copies) <http://www.wes.army.mil/rsm/pubs/technote.html>.

**ERDC/RSM-TN-10**, January 2004, Local-Scale Technologies for Measuring and Monitoring Sediment Process (3.50 MB pdf, 32 pages) <http://www.wes.army.mil/rsm/pubs/technote.html>.

**ERDC/RSM-TN-11**, January 2004, Application of a Regional Sediment Approach to Hickahala Creek Watershed, Northern Mississippi (3.66 MB pdf, 27 pages) <http://www.wes.army.mil/rsm/pubs/technote.html>.

A photograph showing a creek or stream that has become almost impassable due to heavy sedimentation and debris. The water is murky brown, and the channel is filled with a thick layer of mud and silt. Numerous fallen branches, sticks, and other organic debris are scattered across the surface of the water and along the banks. The surrounding area is densely forested with lush green trees, creating a narrow corridor for the waterway. The overall scene conveys a sense of environmental degradation and the need for restoration.

**Sedimentation in Hickahala Creek, Mississippi, watershed**

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